

Trend Study 13B-2-00

Study site name: Upper Westwater-Dolores .

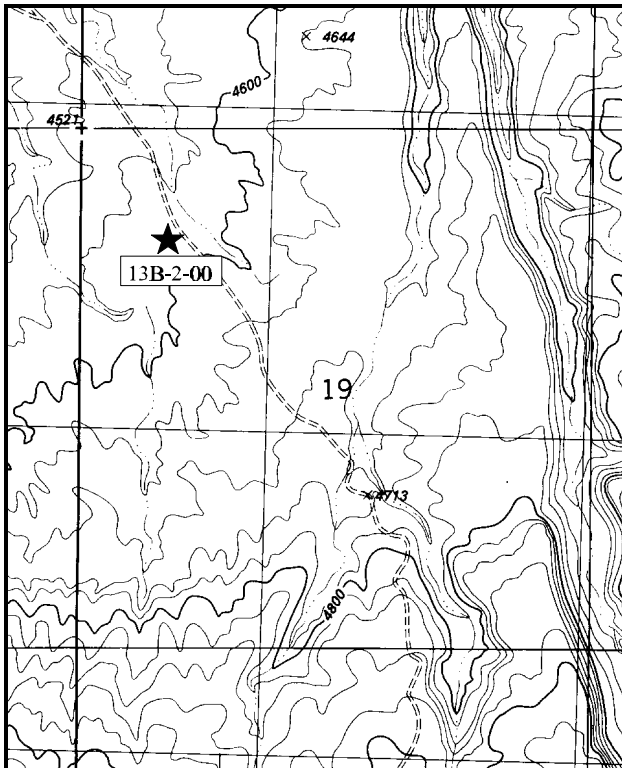
Range type: Burn .

Compass bearing: frequency baseline 165°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

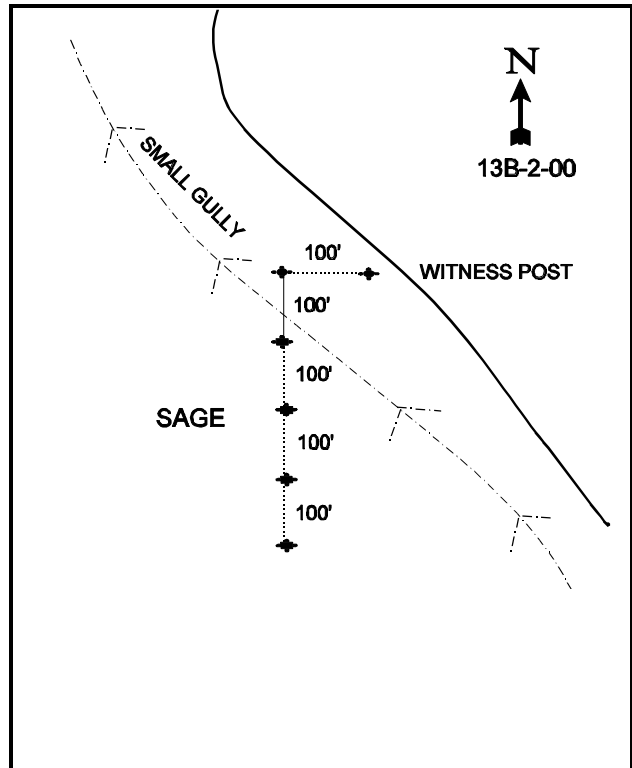
LOCATION DESCRIPTION

From the intersection of the DS Road and A Road west of Glade Park, Colorado, go down A Road 3.7 miles to the TZ Ranch gate. Turn left and go 1.25 miles to a locked gate (necessary to obtain permission and key). Continue 5.6 miles through the valley to the state line. Proceed 0.4 miles to a cabin, turn right and go along the edge of a field 0.2 miles to a wire gate. Go 0.05 miles to a locked pipe gate, and then 3.1 miles on the main road to the transect. There is a witness post (rebar) off the left side of the road 10-15 feet. The 0-foot baseline stake, a rebar tagged #7957, is 100 feet due west of the witness post.



Map Name: Westwater 4SE

Township 20S , Range 26E , Section 19



Diagrammatic Sketch

UTM. 4324545.753 N, 665745.123 E

DISCUSSION

Trend Study No. 13B-2 (34-2)

Like study no. 13B-1, the Upper Westwater study is in the northeast portion of the Dolores Triangle. It samples a big sagebrush flat surrounded by juniper woodland and nearby sandstone cliffs. The Colorado River is approximately 2 miles to the west. The site is at 4,600 feet with a 3-5% slope and a northwest exposure. The area is grazed by cattle in winter and early spring (2,791 AUM's are presently allocated on the allotment). The number of deer pellet groups found at the site are low in number and scattered. Since 1986, the site has burned leaving only a few scattered sagebrush stumps and no living sagebrush plants. The pellet-group transect in 2000 estimated 8 deer days use/acre (20 ddu/ha) (winter use) and 51 cow days use/acre (126 cdu/ha) (winter and spring use). This appears to be excessive livestock use for a burned, depleted area that is made up of almost totally annual, weedy species (96-99% of the total vegetative cover is made up of annual weeds).

The soil is a reddish, sandy loam, which appears to be moderately deep. It is a sandy loam with a neutral pH (7.2). Effective rooting depth is a little more than 14 inches with a moderately high soil temperature (66° F). Phosphorus could be a limiting factor at 8.4 ppm, where 10 is thought necessary for normal plant development and growth. Litter cover was fairly abundant (59%) in 1995, but was essentially contributed by only annual species. This kind of cover characteristically can be lost with drought, as illustrated by the fact that with a very dry winter and summer of 1999-2000, litter cover is now only about half what it was before (59% vs 36%). There was a low amount of bare soil (14%) in 1995, due to the high amounts of cover from litter and annual vegetation. However, now ('00) bare soil has more than doubled to 29%. No rock and very little pavement was sampled. Cryptogamic crust development is evident. It only contributed to 3% cover in 1995, increasing to almost 17% in 2000.

In the past, basin big sagebrush was the dominate browse species with an estimated density of 2,199 plants/acre. Sometime after the 1986 reading the sagebrush population was lost to a wildfire with annual species now dominating the site. The fire appears to have burned very hot with the fine fuels provided by annual species leaving very little sign that sagebrush once dominated the site. There is no indication that the sagebrush population is going to return in the future. Other associated browse species (four-wing saltbush and spiny hopsage) are also gone with no signs of becoming reestablished at this time. Around the periphery of the site, there are still some juniper trees that were singed by the fire, but appear to be recovering.

Annual cheatgrass dominated the understory in 1986. Although dense that year, the cheatgrass appeared to be affected by a fungus that in many areas of the state had greatly reduced seed production during the wet years of 1983-85. Since the destructive wildfire, annual plant species account for as much as 96-99% of the total vegetative cover on the site. Grasses provide 70% of the vegetative cover, with forbs providing the remaining 30%. In 1995, the dominate grass was cheatgrass, which accounted for 57% of the total vegetative cover and sixweeks fescue, also present, contributing 11% vegetative cover. These two grasses combined account for two-thirds of the total vegetative cover and provide great quantities of fine fuel. Galleta and purple threeawn are present but in very low numbers. Tumblemustard and woolly Indian wheat are the predominant forbs on the site and also contribute to the high fuel loads of the site. Currently ('00), because of the dry fall and winter, much of the cheatgrass did not germinate. It has dropped in aerial cover from 16% in 1995 to less than 1% in 2000.

1986 APPARENT TREND ASSESSMENT

Vegetative trend appears stable. The basin big sagebrush is healthy and it has adequate reproduction. An increase in species diversity for shrubs would be desirable to supplement the sagebrush. However, a more palatable species would be severely hedged even though browsing pressure is low on this site. The juniper appear to be increasing, but are not in densities that would form a closed canopy. There is little sign of erosion

and the soil trend appears stable although an increase in perennial grass species would provide needed diversity and a more reliable ground cover than annual cheatgrass. The high amount of annuals makes this community very susceptible to fire and loss of the all the browse component.

1995 TREND ASSESSMENT

Annual vegetation and litter provide ample cover to the soil. Although the soil is protected, they also provide abundant fine fuel to carry another destructive fire. Therefore, soil trend is stable but with poor cover composition. The recent fire removed all browse species from the area and there are apparently no seedlings at this time. The browse trend is down. Deer will likely use this area in the spring when the plants are succulent, but can no longer rely on the area as a source for browse species in moderate or severe winters. The herbaceous understory trend is down because of the poor composition. Perennial species diversity and abundance need to increase for the site to stabilize which will mitigate the effects of future wildfires.

TREND ASSESSMENT

soil - stable (3)

browse - down (1), loss of browse to wildfire

herbaceous understory - down (1), mostly composed of annual species

2000 TREND ASSESSMENT

Annual vegetation and litter still provide fair cover for the soil. Although the soil has some protection, the annual species also provide abundant fine fuel to carry another fire. The amount of bare soil has increased (from 14% to 29%) with significantly lower vegetation and litter cover values. Therefore, soil trend is down because of the continued dominance of annual species and much higher amounts of bare soil. There are still no signs of any kind of browse reproduction on this site which is not surprising in light of the severe competition for soil moisture from the dominance of annual species and the moderately high soil temperatures which is very disadvantageous to the sagebrush seedlings to ever become established through the summer. It would be safe to say that we will not see sagebrush reestablished here in our lifetime. The browse trend is obviously down. Deer will likely use this area in the spring when the plants are succulent, but can no longer rely on the area as a source for browse species in moderate or severe winters. The herbaceous understory trend is down because of the poor cover composition. Perennial species diversity and abundance need to increase for the site to stabilize which could mitigate the effects of future wildfires.

TREND ASSESSMENT

soil - down (1)

browse - down (1), loss of browse to wildfire

herbaceous understory - down (1), mostly composed of annual species

HERBACEOUS TRENDS --

Herd unit 13B, Study no: 2

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'86	'95	'00	'86	'95	'00	'95	'00
G	Aristida purpurea	a ⁻	a ²	b ⁶	-	1	3	.03	.21
G	Bromus tectorum (a)	-	b ³⁷¹	a ¹⁸⁷	-	99	68	16.27	.89
G	Hilaria jamesii	45	40	33	16	14	14	.65	.95
G	Sporobolus cryptandrus	a ⁻	a ⁻	b ¹⁵	-	-	8	-	.93
G	Vulpia octoflora (a)	-	a ²⁷⁷	b ³²⁶	-	89	96	3.01	5.39
Total for Annual Grasses		0	648	513	0	188	164	19.29	6.29
Total for Perennial Grasses		45	42	54	16	15	25	0.69	2.09
Total for Grasses		45	690	567	16	203	189	19.98	8.38
F	Astragalus spp.	a ⁻	b ¹⁵	a ⁻	-	6	-	.08	-
F	Calochortus nuttallii	-	3	-	-	1	-	.00	-
F	Chenopodium fremontii (a)	-	a ⁻	b ¹²	-	-	7	-	.03
F	Cryptantha spp.	-	1	-	-	1	-	.00	-
F	Draba spp. (a)	-	a ⁻	b ²⁴	-	-	8	-	.04
F	Eriogonum cernuum (a)	-	2	-	-	1	-	.00	-
F	Erodium cicutarium (a)	-	a ⁴⁴	b ²¹³	-	19	64	.14	9.74
F	Erigeron spp.	-	2	-	-	1	-	.00	-
F	Lepidium densiflorum (a)	-	b ⁷⁰	a ¹⁰	-	31	5	.15	.05
F	Machaeranthera spp	a ⁻	b ⁶	a ⁻	-	3	-	.01	-
F	Navarretia intertexta (a)	-	b ⁵¹	a ¹¹	-	26	5	.15	.02
F	Plantago patagonica (a)	-	b ²⁷⁶	a ⁶	-	89	3	1.93	.01
F	Salsola iberica (a)	-	a ⁻	b ¹⁰	-	-	4	-	.02
F	Sisymbrium altissimum (a)	-	b ³⁰⁷	a ²⁴¹	-	98	87	5.85	3.69
F	Sphaeralcea coccinea	a ²	c ⁵⁴	b ²⁵	1	25	12	.27	.72
Total for Annual Forbs		0	750	527	0	264	183	8.25	13.62
Total for Perennial Forbs		2	81	25	1	37	12	0.38	0.72
Total for Forbs		2	831	552	1	301	195	8.63	14.35

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --

Herd unit 13B, Study no: 2

Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Gutierrezia sarothrae	0	1	-	.03
Total for Browse		0	1	0	0.03

BASIC COVER --

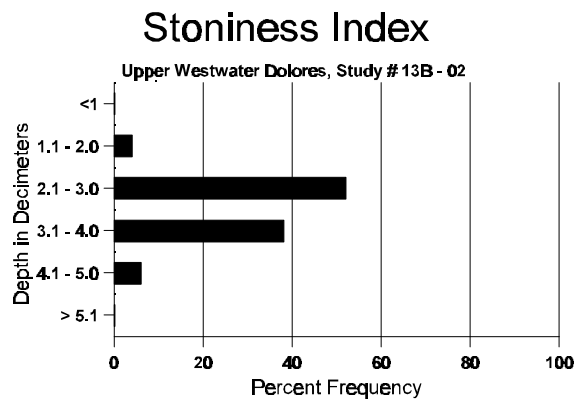
Herd unit 13B, Study no: 2

Cover Type	Nested Frequency		Average Cover %		
	'95	'00	'86	'95	'00
Vegetation	393	371	10.50	47.54	26.79
Rock	3	3	0	.00	.00
Pavement	-	9	0	0	.01
Litter	399	370	69.50	59.21	36.02
Cryptogams	195	272	3.50	3.03	16.78
Bare Ground	293	355	16.50	13.90	29.22

SOIL ANALYSIS DATA --

Herd Unit 13B, Study # 2, Study Name: Upper Westwater Dolores

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
14.44	65.6 (17.87)	7.2	56.0	26.0	18.0	0.4	8.4	163.2	0.5



PELLET GROUP FREQUENCY --

Herd unit 13B, Study no: 2

Type	Quadrat Frequency		Pellet Transect	
	'95	'00	Pellet Groups per Acre 00	Days Use per Acre (ha) 00
Rabbit	9	2	-	-
Deer	10	9	104	8 (20)
Cattle	9	25	609	51 (126)

BROWSE CHARACTERISTICS --

Herd unit 13B, Study no: 2

Artemisia tridentata tridentata																			
YGR E	86 95 00	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total	
		1	2	3	4	5	6	7	8	9	1	2	3	4					
		10	-	-	-	-	-	-	-	-	10	-	-	-		666			10
		-	-	-	-	-	-	-	-	-	-	-	-	-		0			0
		-	-	-	-	-	-	-	-	-	-	-	-	0		0			
M	86 95 00	6	-	-	-	-	-	-	-	-	6	-	-	-	400	28	27	6	
		-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
		-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
		-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
D	86 95 00	17	-	-	-	-	-	-	-	-	17	-	-	-	1133			17	
		-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
		-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
		-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>								
'86		00%			00%			00%											
'95		00%			00%			00%											
'00		00%			00%			00%											
Total Plants/Acre (excluding Dead & Seedlings)												'86	2199	Dec:	52%				
												'95	0		0%				
												'00	0		0%				
Gutierrezia sarothrae																			
M	86 95 00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
		-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
		-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	12	0	
		-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
D	86 95 00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
		-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
		1	-	-	-	-	-	-	-	-	-	-	-	1	20			1	
		-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>								
'86		00%			00%			00%											
'95		00%			00%			00%											
'00		00%			00%			100%											
Total Plants/Acre (excluding Dead & Seedlings)												'86	0	Dec:	0%				
												'95	0		0%				
												'00	20		100%				